In response, independent claims 1 and 4 have been amended to recite at least one microlens that is attached to the backside of a substrate to place the microlens between the substrate and a detector array. Support for these amendments is found in the specification on page 4, lines 1-19. Claims 1-6 remain pending.

Rejections Under 35 U.S.C. §102(b)

Regarding the rejection of Claims 1-3 and 6 over Gal, amended independent claims 1 and 4 recite a microlens that is attached to a substrate in a manner that places the microlens between the substrate and a focal plane array. It is clear that Gal does not disclose this structure, in fact Gal discloses a device wherein the microlens is attached to the substrate on the opposing side of the substrate from the detector array (See Fig. 17 and Col. 13, Lines 7-12). Unlike Applicant's invention, this places the substrate between the lens and the detector array. Therefore, Gal does not meet the element-by-element requirements of Sec. 102(b). Dependent claims 2-3 and 6 contain the same limitations as respective amended independent claims 1 and 4 and are allowable for the same reasons.

Rejections Under 35 U.S.C. §103(a)

With respect to the Sec. 103(a) rejection of Claims 4 and 5, it is clear that the basic thrust of Gal is the use of dispersive microlens structure to detect different wavelengths from within an image plane blur spot, in order to "fill in" the blur spot. For this purpose, various Fresnel configurations for a microlens are discussed throughout Gal, and the improved fill factor disclosed in Gal is with respect to blur spots.

Conversely, Applicant's invention as recited in amended claim 4 is directed at establishing a system and technique for using micro-optics with a detector array without actually placing the micro-optics on the array, as forming the micro-optics directly on the array involves significant cost issued to the nature of the detector material (P. 1, Line 17 through P. 2, Line 17). To do this, amended claim 4 recites the step of attaching microlenses to a substrate so that they are positioned between the substrate and a

proximate focal plane array. Thus, there is no incentive to modify the structure recited in Gal to lead to the technique described in amended Claim 4.

Moreover, Gal actually teaches away from Applicant's invention. Specifically, for the device recited in Gal, the microlenses must be placed on the side where incident energy strikes the substrate, otherwise, the recited Fresnel lens structure for the microlens in Gal will not work. Thus, the Gal device requires that the microlenses be attached to the side of the substrate opposite from the detector array. Applicant's device as recited in amended Claim 4, wherein the microlenses must be located between the substrate and the focal plane array.

For the above reasons, Applicant asserts that Gal does not teach or suggest the invention claimed in amended claim 4. Claim 5 contains the same limitations as amended claim and is allowable for the same reasons

Applicant has made a bona fide effort to remove informalities from the specification, and to properly amend the claims. As such, it is believed the present application is in a condition for allowance. Accordingly, a Notice to that effect is most respectfully requested.

Dated: May 8, 2003

Respectfully Submitted,

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EXHIBIT A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Thomas M. Colandene	)	
Serial No.: 09/888,509	)	Examiner J. Martinez
Filed: June 26, 2001	)	Art Unit 2873
Title: OFF-FOCAL PLANE MICRO-OPTICS	)	

COMPLETE LISTING OF ALL CLAIMS PER 37 C.F.R. SEC. 1.121(PROPOSED)

1. (currently amended) An apparatus for providing a micro-optic function within an optical system comprising:

a focal plane array (FPA) having a detector surface, wherein input radiation from a viewed scene is received by the optical system; and,

B1 a substrate with a front side and a back side, said back side further including at least one microlens attached thereto to place said microlens between said FPA and said substrate, said substrate being positioned approximate to the focal plane within said optical system, wherein said microlens re-focuses said radiation and re-directs said radiation onto said detector surface.

B2 2. (original) The apparatus of claim 1 wherein said microlens is a diffractive lens structure.

3. (original) The apparatus of claim 1 wherein said microlens is a refractive lens structure.

B3 4. (amended) A micro-optic technique for a substrate within an optical system having a focal plane array (FPA) detector surface, comprising the steps of:

receiving incident radiation from a viewed scene through an optical assembly;

providing a substrate having a front side and a back side on the optical axis in proximity to the focal plane within said optical assembly;

attaching at least one micro-optic on the substrate to said back side to place said microlens between said FPA and said substrate; and,

5. (original) The micro-optic technique of claim 4 wherein said micro-optic effect is an improved detector fill factor.

6. (previously added) The apparatus as recited in claim 1 wherein said focal plane array further comprises at least one optical detector, each said optical detector corresponding to a respective microlens.

Dated: May 8, 2003

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